

Section 222—Aggregate Drainage Courses

222.1 General Description

This work includes installing aggregate drainage courses. The drainage courses shall conform to the Specifications and to the lines, grades, and dimensions shown on the Plans or directed by the Engineer.

222.1.01 Definitions

General Provisions 101 through 150.

222.1.02 Related References

A. Standard Specifications

Section 109—Measurement and Payment

Section 208—Embankments

Section 209—Subgrade Construction

Section 806—Aggregate for Drainage

B. Referenced Documents

General Provisions 101 through 150.

222.1.03 Submittals

General Provisions 101 through 150.

222.2 Materials

Ensure that materials meet the requirements of the following Specifications:

Material	Subsection
Type I Aggregate Drainage Course	806.2.01
Type II Aggregate Drainage Course	806.2.02
Type III Drainage Blanket Material	806.2.03

222.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

222.3 Construction Requirements

222.3.01 Personnel

General Provisions 101 through 150.

222.3.02 Equipment

A. Embankment or Subgrades

To spread a uniform layer of coarse or fine aggregate without segregation and compact it to the specified requirements, use hauling and spreading equipment approved by the Engineer.

B. Other Surfaces

On any other surface, including wet and unstable areas, use trucks for end-dumping, and bulldozers and road machines for spreading.

222.3.03 Preparation

General Provisions 101 through 150.

222.3.04 Fabrication

General Provisions 101 through 150.

222.3.05 Construction

Construct the roadbed according to the lines, grades, and typical cross-sections shown on the Plans and according to Section 208 and Section 209.

Use coarse aggregate, drainage course, and drainage blanket material as follows:

Type I Aggregate Drainage Course	Use in a trench around pipe or in the shoulder in conjunction with a trench.
Type II Aggregate Drainage Course	Use as a drainage blanket under sidewalks, curbs and gutter, and beneath the pavement system or shoulders.
Type III Drainage Blanket Material	Use on parts of the roadway shown on the Plans as requiring a drainage blanket.

A. Prepared Embankments or Subgrades

1. Place the Material

Spread the material uniformly to obtain the compacted depth required on the Plans and as follows:

- The maximum thickness of each course is 6 in (150 mm) compacted, except as noted in Subsection 222.3.02.B, "Other Surfaces."
- If installing an underdrain system immediately under or adjacent to the aggregate drainage course, connect the drainage course directly to the underdrain system.
- After placing the pavement, make the subbase outside of the pavement flush with the outside pavement edge. Do not cut cement-stabilized subbase—keep it in place.
- When necessary, cover a shoulder drainage course with a second layer of shoulder pavement to prevent contaminating the aggregate drainage material.

2. Compact the Material

Compact the material according to the following procedures, and have the Engineer approve it.

- Unless specified otherwise by the Engineer, begin rolling on the outer edge of the drainage course and progress toward the center. On super-elevated curves or shoulders, begin rolling on the lower edge and progress toward the higher edge.
- For a Type II aggregate drainage course, roll when the moisture content of the material is at or near the optimum moisture.
- Roll until the surfaces of each layer are uniformly compacted.
- Compact the final layer with a steel wheel roller weighing no less than 10 tons (9 Mg) or a vibratory roller approved by the Engineer.
- If a layer is deficient in required thickness by more than 3/4 in (19 mm), scarify the surface and add more material to the thin area. Compact again according to the Specifications.

B. Other Surfaces

1. Prepare the Area

- Before placing drainage material, excavate or trench low areas for positive drainage as directed by the Engineer.
- Excavate trenches and undercutting to the dimensions and grades indicated on the Plans.

2. Drain the Area

Drain unstable or wet areas when the area is in the subgrade or the original ground surface is an embankment area or a trench. Spread drainage material to the requirements on the Plans or as directed by the Engineer.

3. Compact the Material

Compact drainage material until stable.

222.3.06 Quality Assurance

General Provisions 101 through 150.

222.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

222.4 Measurement

Aggregate drainage course is measured by the ton (megagram) or cubic yard (meter). When measured by the ton (megagram), the weight is determined by approved truck scales at the job site, or by other scales approved in advance. When measured by the cubic yard (meter), the loose volume is determined as specified in Section 109.

222.4.01 Limits

General Provisions 101 through 150.

222.5 Payment

Aggregate drainage course of the type specified will be paid for at the Contract Unit Price per ton (megagram) or per cubic yard (meter).

Payment will be made under:

Item No. 222	Aggregate Drainage Course, Type ____	Per ton (megagram)
Item No. 222	Aggregate Drainage Course, Type ____	Per cubic yard (meter).
Item No. 573	Underdrain Pipe including Drainage Aggregate ____ in(mm)	Per linear foot (meter)

222.5.01 Adjustments

If the average thickness for any 1-mile (1600 m) increment exceeds the specified thickness by more than 1 in (25 mm), the Department will reduce the Contractor's payment for the excess material. The Department will calculate the excess material by multiplying how much average thickness exceeded the allowable 1 in (25 mm) tolerance by the surface area of the course.

Section 225—Soil-Lime Construction

225.1 General Description

This work includes preparing and treating roadbed materials with lime to form a base, subbase, or subgrade.

Water, mix, shape, and compact the necessary material according to these requirements and with the lines, grades, and thickness indicated on the Plans.

Lime treated roadbed materials, subbases, or bases will be designated as Class A, Class B, or Class C.

The requirements of these Specifications are applicable to each course or layer, unless otherwise indicated on the Plans.

225.1.01 Definitions

General Provisions 101 through 150.

225.1.02 Related References

A. Standard Specifications

Section 109—Measurement and Payment

Section 205—Roadway Excavation

Section 209—Subgrade Construction

Section 301—Soil-Cement Construction

Section 412—Bituminous Prime

Section 810 – Roadway Materials

Section 814 – Soil Base Materials

Section 821—Cutback Asphalt

Section 880—Water

Section 882—Lime